Table C-1. Montane Riverine Aquatic Communities: Potential CALFED Effects and Conservation Measures

Summary Effect of Implementing CALFED Actions with Conservation Measures on Montane Riparian Aquatic Communities: Potential for increase in shaded riverine aquatic and instream habitats and improved stream temperatures along Sacramento and San Joaquin Rivers and North Bay tributaries, and improvement in passage of anadromous fish to and from habitat areas. Potential for permanent fragmentation of montane riverine aquatic habitat corridors if new reservoirs are constructed in existing habitat areas.

Associated Evaluated Species: Bald eagle, California red-legged frog, Central Coast Steelhead Evolutionarily Significant Unit (ESU), Central Valley Steelhead ESU, winter-run chinook salmon, winter-run chinook salmon critical habitat, rough sculpin, McCloud River redband trout, California freshwater shrimp, Central Valley fall-run chinook salmon, Central Valley spring-run chinook salmon, osprey, western pond turtle, foothill yellow-legged frog, hardhead, and eel-grass pondweed.

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Delta Region					
CALFED actions proposed for the Delta Region would not affect montane riverine communities.					
Bay Region					
Associated Evaluated Species: Bald eagle, California red-legged frog, Central Coast Steelhead ESU, Central Valley Steelhead ESU, winter-run chinook salmon, California freshwater shrimp, Central Valley fall-run chinook salmon, Central Valley spring-run chinook salmon, osprey, western pond turtle, foothill yellow-legged frog, and hardhead.					
Summary Programmatic Action Outcomes E1, E5b, E7, E10b, E12, E13b, E14, E15b, E16b, E21, E24, E25, E28, E30, L3, Q2, Q4, Q7, W3, and W4 are likely to have no discernable effect on montane riverine aquatic communities in the Bay Region.					
Ecosystem Restoration Program					
E22. Reduction in the adverse effects of diversions on fish.	E024701	Reducing diversions from tributaries could improve flow conditions for sustaining populations of native fish and could reestablish floodplain processes associated with flow to more historical conditions (BE1).	Likely to be no discernable adverse effects on existing habitat areas and associated evaluated species (N/E).	None.	Potential for improved flow conditions for native species and restoration of floodplain processes. Increased survival during some life stages of aquatic species that are susceptible to entrainment.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
		Increased survival of native aquatic species during life stages when species are susceptible to being entrained in diversions (BE2).			
Water Quality Program					
Q8. Reduction of sediment loadings to levels that do not adversely affect beneficial uses of surface water.	Q020901	Potential beneficial effects of the program are not analyzed. The type and magnitude of potential beneficial effects would depend on the type of specific program actions that are implemented (N/A).	Potential adverse effects of the program are not analyzed. The type and magnitude of potential adverse effects would depend on the type of specific program actions that are implemented (N/A).		Potential program effects cannot be evaluated.
Water Use Efficiency Program					
W1. Support implementation of water management techniques that increase the effectiveness of water use management and efficiency for agricultural uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Water Transfer Program					
T1. Implement a framework of actions, policies, and processes that will facilitate transfers and the further development of a statewide water transfer market.	None.	Potential for improvement in flow conditions for native aquatic species if water transfers result in establishing flow conditions that more closely emulate the natural historical flow conditions in affected tributaries (BE3).	Potential for degradation of flow conditions for native aquatic species if water transfers result in establishing flow conditions that are less similar to the natural historical flow conditions in affected tributaries (AE1).	To the extent consistent with CALFED objectives, avoid implementing transfers of water from sources that support flows that are beneficial to maintaining populations of native aquatic species (M1). To the extent practicable, augment flows from other sources to maintain existing flow conditions (M2).	Potential for improved flow conditions for native aquatic species.
Watershed Management Program					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Sacramento River Region					
Associated Evaluated Species: Bald eagle, California red-legged frog, Central Valley Steelhead ESU, winter-run chinook salmon, winter-run chinook salmon critical habitat, California freshwater shrimp, Central Valley fall-run chinook salmon, Central Valley spring-run chinook salmon, rough sculpin, McCloud River redband trout, osprey, western pond turtle, foothill yellow-legged frog, hardhead, and eel-grass pondweed.					
Summary Programmatic Action Outcomes E3, E13c, E16c, E18b, E26, Q1, Q2, W3, W4, and S2 are likely to have no discernable effect on montane riverine aquatic communities in the Sacramento River Region.					
Ecosystem Restoration Program					
E1. Provide for more natural river flows and Bay-Delta freshwater inflow peaks in fall, winter, and spring of all but critical years.	E030101, E030102, E040101, E040102, E040103, E040104, E044701, E044703, E050101, E070101, E070102, E070103, E070104, E070105, E070106, E080101, E080102, E080103, E080104, E090101, E090102, E090103, E090104, E090105, E090106, E090107, E100101, E100102	Improved streamflows in undammed tributaries would improve flow conditions for sustaining populations of native aquatic species and could reestablish floodplain processes associated with flow similar to the natural historical conditions (BE4).	N/E	None.	Improved flow conditions for native species and restoration of floodplain processes.
E2. Improvement in the supply of sediment to rivers and streams necessary for providing spawning gravels and rehabilitation of related ecological processes (e.g., stream meander) and floodplain habitats (e.g., riparian habitats).	E030201, E030202, E030301, E030302, E030303, E030604, E031602, E040201, E040202, E040203, E040301, E040402, E050201, E050202, E050203, E060401, E070201, E070202, E070203, E080201, E080202, E080203, E080303, E090201, E090401, E090403, E090404, E090407, E090409, E100201, E100202, E105101	Improving sediment supplies in tributaries could improve spawning conditions for some species and would contribute to restoring floodplain processes (BE5).	Potential for temporary increase in turbidity resulting from implementing actions necessary to increase sediment supplies (AE2).	None.	Improved sediment supplies in tributaries could improve spawning conditions for some species and contribute to restoring floodplain processes. Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.

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Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
		Potential for improved SRA habitat, instream habitat, and stream temperature conditions if increased sediment supplies increases the number and area of point bars and other depositional features along channels that would provide suitable substrates for the natural establishment of riparian vegetation (BE6).	Construction-related activities associated with implementing actions could result in take of evaluated species (AE3).	To the extent practicable, avoid implementing actions that could result in take of evaluated species during periods when evaluated species are present in habitat areas that could be affected by the actions (M3).	
E6. Restoration and maintenance of riverine aquatic habitats.	E031602, E030301, E030302, E030303, E030604, E040301, E040402, E050201, E050202, E050203, E050301, E050401, E050402, E050403, E050404, E050405, E060401, E070201, E070202, E070203, E080301, E080302, E080303, E080401, E080402, E090401, E090402, E090403, E090404, E090407, E090408, E090408, E091604, E091605, E090201	BE5. BE6.	AE2. AE3.	None. M3.	Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E15c. Protection and enhancement of 9,000–13,000 acres of riparian habitat in meander zones along the Sacramento River and its tributaries; protection, enhancement, and restoration of riparian habitat and shaded riverine aquatic (SRA) cover along other reaches of the Sacramento River and its tributaries; and reduction of populations of non-native invasive plants.	E031601, E031602, E031603, E031604, E031605, E030302, E030303, E030304, E035301, E035302, E040301, E040401, E041601, E041602, E041603, E051601, E051602, E051603, E061601, E065301, E071601, E071603, E071604, E080301, E080302, E080303, E080401, E081601, E081602, E081603, E090401, E090403, E090404, E090407, E091601, E091602, E091603, E091606, E095301, E101601, E101602, E101603, E101604, E105301	Potential for improved SRA habitat, instream habitat, and stream temperature conditions for populations of native aquatic species (BE7).	AE2.	None.	Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.
E22. Reduction in the adverse effects of diversions on fish.	E034701, E034702, E034703, E034704, E044701, E044702, E044703, E044801, E044802, E044803, E074701, E074702, E074703, E074704, E084701, E084703, E084704, E094701, E094702, E104701	BE1. BE2.	N/E	None.	Potential for improved flow conditions for native species and restoration of floodplain processes. Increased survival during some life stages of aquatic species that are susceptible to entrainment.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E23. Improvement in passage of anadromous fish to and from spawning areas and reduction in levels of fish straying as a result of reducing the effects of structural impediments to fish movement.	E034801, E034802, E044702, E044801, E044802, E044803, E044804, E044805, E074801, E074802, E074803, E074804, E074805, E074806, E080501, E084801, E084802, E084803, E104701	Potential for increasing numbers of all life stages of anadromous fish as a result of increasing access to or restoring historical spawning habitats, reducing mortalities to straying, and increasing the number of juveniles successfully passing downstream of barriers (BE8).	AE2.	None.	Potential for increased populations of anadromous fish.
E24. Reduction in levels of predation on juvenile anadromous fish.	E035601, E084801	Potential for increasing numbers of juvenile anadromous fish successfully outmigrating to the Bay-Delta (BE9).	AE2.	None.	Potential for increased populations of anadromous fish.
E25. Reduction in the adverse effects of harvest on fish and wildlife populations.	E035801, E035802, E035803, E045801, E045802, E045803, E075801, E075802, E075803, E085801, E085802, E085803, E095801, E095802	Potential for increasing spawning populations of anadromous and other native fish (BE10).	N/E	None.	Potential for increased populations of anadromous and other native fish.
E27b. Reduction in the concentrations and loadings of contaminants in the aquatic environment.	E035702, E035703, E035704, E095701, E095702, E105701, E105702	Reduction in contaminant loadings in montane riverine aquatic habitats could improve the survivability of some species and increase aquatic invertebrate populations that are adversely affected by toxic agents (BE11).	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluated species numbers or distribution.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Water Quality Program					
Q3. Reduction of mercury loadings in water and sediment.	Q030301, Q030302, Q040301, Q040302, Q050301, Q050302, Q060301, Q060302, Q070301, Q070302, Q080301, Q080302, Q090301, Q090302, Q100301, Q100302	BE11.	AE2.	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluated species numbers or distribution.
Q4. Reduction of pesticide loadings in the aquatic environment.	Q030501, Q040501, Q050501, Q060501, Q070501, Q080501, Q090501, Q100501	BE11.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluated species numbers or distribution.
Q7. Reduction of cadmium, copper, and zinc loadings to levels that do not adversely affect Bay-Delta species or beneficial uses of water.	Q030801, Q040801, Q040802, Q050801, Q050802, Q060801, Q060802, Q070801, Q070802, Q080801, Q080801, Q090801, Q090802, Q100801, Q100802	BE11.	AE2.	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluated species numbers or distribution.
Water Use Efficiency Program					
W1. Support implementation of water management techniques that increase the effectiveness of water use management and efficiency for agricultural uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.	N/A	N/A		Potential program effects cannot be evaluated.
Water Transfer Program					
T1. Implement a framework of actions, policies, and processes that will facilitate transfers and the further development of a statewide water transfer market.	None.	BE3.	AE1.	M1. M2.	Potential for improved flow conditions for native aquatic species.
Watershed Management Program					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Storage Facilities					
S1. Construct and operate enlarged or new surface storage facilities.	None.	Likely to be no discernable beneficial effects on existing habitat areas and associated evaluated species (N/E).	Permanent loss of habitat if storage facilities and associated infrastructure are constructed in drainages that support montane riverine habitat (AE4).	Avoid constructing storage reservoirs on tributaries that support important spawning populations of anadromous fish (M4).	Potential for loss or degradation of montane riverine aquatic habitat. Potential for permanent fragmentation of stream corridors and disruption in movement patterns of evaluated species.
				To the extent practicable, design storage facilities to allow passage of anadromous fish to and from spawning habitat located above reservoirs (M5).	
			Potential for degradation of montane riverine habitat downstream of storage reservoirs if storage operations reduce current patterns of flow (AE5).	To the extent practicable, provide sufficient outflow from storage reservoirs sufficient to maintain existing aquatic habitat conditions downstream of storage reservoirs (M6).	
			Fragmentation of riverine habitat and disruption of fish movement patterns (AE6).	M5.	
			AE2.	M3.	

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
				To the extent practicable, trap and relocate to suitable nearby habitat areas evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs (M7).	
			Recreation-related activities potentially associated with new storage facilities could result in take of evaluated species (AE7).	Manage recreational uses to avoid or reduce the likelihood for recreation-related impacts on important montane riverine aquatic habitat areas and evaluated plant and animal species (M8).	
Water Operations					
01. Implement operating criteria needed to improve water management for beneficial uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
02. Implement an Environmental Water Account to provide operational flexibility to achieve environmental benefits.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
San Joaquin River Region					
Associated Evaluated Species: Bald eagle, California red-legged frog, Central Valley Steelhead ESU, winter-run chinook salmon, Central Valley fall-run chinook salmon, osprey, western pond turtle, foothill yellow-legged frog, and hardhead.					
Summary Programmatic Action Outcomes E13d, E18c, E26, E29, Q1, Q2, Q4, Q5, Q6, Q8, W3, W4, and S2 are likely to have no discernable effect on montane riverine aquatic communities in the San Joaquin River Region.					
Ecosystem Restoration Program					
E1. Provide for more natural river flows and Bay-Delta freshwater inflow peaks in fall, winter, and spring of all but critical years.	E110101, E110102, E110103, E110104, E110105, E110106, E110107, E110108, E110109, E110110, E110205, E110502, E120101, E130103, E130101, E130102, E130104, E130105, E140101, E140102, E140103, E140104	BE4.	N/E	None.	Improved flow conditions for native species and restoration of floodplain processes.
E2. Improvement in the supply of sediment to rivers and streams necessary for providing spawning gravels and rehabilitation of related ecological processes (e.g., stream meander) and floodplain habitats (e.g., riparian habitats).	E110201, E110202, E110203, E110204, E110205, E110206, E110207, E110208, E110209, E130201, E130202, E130203, E130301, E130302, E130303, E130304, E130305, E130306, E130307, E130402, E135601, E140401, E140403	BE5. BE6.	AE2. AE3.	None. M3.	Improved sediment supplies in tributaries could improve spawning conditions for some species and contribute to restoring floodplain processes. Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E6. Restoration and maintenance of riverine aquatic habitats.	E110401, E110401, E130301, E130302, E130303, E130304, E130305, E130306, E130307, E130402, E135601, E131601, E131602, E131603, E140401, E140402, E140403	BE5. BE6.	AE2. AE3.	None. M3.	Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.
E15d. Restore up to 4,720 acres of riparian and shaded riverine aquatic habitat; protection and enhancement of up to 1,000 acres of riparian habitat in meander zones along San Joaquin River tributaries; restoration of up to 75 miles of riparian habitat along the San Joaquin River and its tributaries; protection, enhancement, and restoration of riparian habitat and SRA cover along other reaches of the San Joaquin River and its tributaries; and reduction of populations of non-native invasive plants along the northern tributaries to the San Joaquin River.	E110401, E111601, E111602, E111603, E111604, E111605, E111606, E111607, E111608, E111609, E111610, E111611, E111612, E111613, E111614, E111615, E115301, E121601, E121602, E121603, E124901, E130301, E130302, E130303, E130304, E130305, E130306, E130307, E130401, E131601, E131602, E131603, E134101, E134103, E140401, E140402, E140403, E141601	BE7.	AE2.	None.	Potential for improved SRA habitat, instream habitat, and temperature conditions for populations of native aquatic species.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
E22. Reduction in the adverse effects of diversions on fish.	E114701, E114702, E114703, E114704, E124701, E124702, E134701, E134702, E134703	BE1. BE2.	N/E	None.	Potential for improved flow conditions for native species and restoration of floodplain processes. Increased survival during some life stages of aquatic species that are susceptible to entrainment.
E23. Improvement in passage of anadromous fish to and from spawning areas and reduction in levels of fish straying as a result of reducing the effects of structural impediments to fish movement.	E114801, E114802, E114803, E114804, E134801, E134802	BE8.	AE2.	None.	Potential for increased populations of anadromous fish.
E24. Reduction in levels of predation on juvenile anadromous fish.	E115601, E115602, E135601	BE9.	AE2.	None.	Potential for increased populations of anadromous fish.
E25. Reduction in the adverse effects of harvest on fish and wildlife populations.	E115801, E115802, E135801, E135802	BE10.	N/E	None.	Potential for increased populations of anadromous and other native fish.
E27b. Reduction in the concentrations and loadings of contaminants in the aquatic environment.	E115701, E115702, E115703, E125701, E125702	BE11.	N/E	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluation species' numbers or distribution.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Water Quality Program					
Q7. Reduction of cadmium, copper, and zinc loadings to levels that do not adversely affect Bay-Delta species or beneficial uses of water.	Q110801, Q110802, Q120801, Q120802, Q130801, Q130802, Q140801, Q140802	BE11.	AE2.	None.	Implementation of the proposed actions would most likely have no discernable effect on evaluation species' numbers or distribution.
Water Use Efficiency Program					
W1. Support implementation of water management techniques that increase the effectiveness of water use management and efficiency for agricultural uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.
W2. Support implementation of measures that increase agricultural production per unit of water used, protect water quality, or increase environmental benefits while meeting agricultural needs.	None.	N/A	N/A		Potential program effects cannot be evaluated.
Water Transfer Program					
T1. Implement a framework of actions, policies, and processes that will facilitate transfers and the further development of a statewide water transfer market.	None.	BE3.	AE1.	M1. M2.	Potential for improved flow conditions for native aquatic species.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
Watershed Management Program					
M1. Fund and implement watershed restoration, maintenance, conservation, and monitoring activities.	None.	N/A	N/A		Potential program effects cannot be evaluated.
Storage Facilities					
S1. Construct and operate enlarged or new surface storage facilities.	None.	N/E	AE4. AE5. AE6. AE2. AE7.	M4. M5. M6. M5. M3. M7. M8.	Potential for loss or degradation of montane riverine aquatic habitat. Potential for permanent fragmentation of stream corridors and disruption in movement patterns of evaluated species.
Water Operations					
01. Implement operating criteria needed to improve water management for beneficial uses.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Table C-1. Continued

Summary Programmatic Action Outcomes	Applicable Programmatic Actions	Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program	Overall Effect of Summary Programmatic Action Outcomes with Conservation Measures
02. Implement an Environmental Water Account to provide operational flexibility to achieve environmental benefits.	None.	N/A	N/A		Potential program effects cannot be evaluated.

Contributors to the development of this table: Tom Cannon and Pete Rawlings of Jones & Stokes Associates.

Table C-2. Key to Table C-1 Potential Beneficial Effects, Potential Adverse Effects, and Conservation Measures Codes

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
Reducing diversions from tributaries could improve flow conditions for sustaining populations of native fish and could reestablish floodplain processes associated with flow to more historical conditions (BE1).	Potential for degradation of flow conditions for native aquatic species if water transfers result in establishing flow conditions that are less similar to the natural historical flow conditions in affected tributaries (AE1).	To the extent consistent with CALFED objectives, avoid implementing transfers of water from sources that support flows that are beneficial to maintaining populations of native aquatic species (M1).
Increased survival of native aquatic species during life stages when species are susceptible to being entrained in diversions (BE2).	Potential for temporary increase in turbidity resulting from implementing actions necessary to increase sediment supplies (AE2).	To the extent practicable, augment flows from other sources to maintain existing flow conditions (M2).
Potential for improvement in flow conditions for native aquatic species if water transfers result in establishing flow conditions that more closely emulate the natural historical flow conditions in affected tributaries (BE3).	Construction-related activities associated with implementing actions could result in take of evaluated species (AE3).	To the extent practicable, avoid implementing actions that could result in take of evaluated species during periods when evaluated species are present in habitat areas that could be affected by the actions (M3).
Improved streamflows in undammed tributaries would improve flow conditions for sustaining populations of native aquatic species and could reestablish floodplain processes associated with flow similar to the natural historical conditions (BE4).	Permanent loss of habitat if storage facilities and associated infrastructure are constructed in drainages that support montane riverine habitat (AE4).	Avoid constructing storage reservoirs on tributaries that support important spawning populations of anadromous fish (M4).
Improving sediment supplies in tributaries could improve spawning conditions for some species and would contribute to restoring floodplain processes (BE5).	Potential for degradation of montane riverine habitat downstream of storage reservoirs if storage operations reduce current patterns of flow (AE5).	To the extent practicable, design storage facilities to allow passage of anadromous fish to and from spawning habitat located above reservoirs (M5).

Table C-2. Continued

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
Potential for improved SRA habitat, instream habitat, and stream temperature conditions if increased sediment supplies increases the number and area of point bars and other depositional features along channels that would provide suitable substrates for the natural establishment of riparian vegetation (BE6).	Fragmentation of riverine habitat and disruption of fish movement patterns (AE6).	To the extent practicable, provide sufficient outflow from storage reservoirs sufficient to maintain existing aquatic habitat conditions downstream of storage reservoirs (M6).
Potential for improved SRA habitat, instream habitat, and stream temperature conditions for populations of native aquatic species (BE7).	Recreation-related activities potentially associated with new storage facilities could result in take of evaluated species (AE7).	To the extent practicable, trap and relocate to suitable nearby habitat areas evaluated wildlife species that would be unlikely to escape from the inundation area of new or enlarged reservoirs (M7).
Potential for increasing numbers of all life stages of anadromous fish as a result of increasing access to or restoring historical spawning habitats, reducing mortalities to straying, and increasing the number of juveniles successfully passing downstream of barriers (BE8).	Potential adverse effects of the program are not analyzed. The type and magnitude of potential adverse effects would depend on the type of specific program actions that are implemented (N/A).	Manage recreational uses to avoid or reduce the likelihood for recreation-related impacts on important montane riverine aquatic habitat areas and evaluated plant and animal species (M8).
Potential for increasing numbers of juvenile anadromous fish successfully outmigrating to the Bay-Delta (BE9).	Likely to be no discernable adverse effects on existing habitat areas and associated evaluated species (N/E).	
Potential for increasing spawning populations of anadromous and other native fish (BE10).		
Reduction in contaminant loadings in montane riverine aquatic habitats could improve the survivability of some species and increase aquatic invertebrate populations that are adversely affected by toxic agents (BE11).		

Table C-2. Continued

Potential Beneficial Effects	Potential Adverse Effects	Conservation Measures Incorporated into the Program
Potential beneficial effects of the program are not analyzed. The type and magnitude of potential beneficial effects would depend on the type of specific program actions that are implemented (N/A). Likely to be no discernable beneficial effects on existing habitat areas and associated evaluated species (N/E).		